

CW Practice - 11/4 - Composition

1) $f(x) = 3x - 2$ $g(x) = 2x^3 + 1$ Find $(f \circ g)(x)$

2) $f(x) = x + 2$ $g(x) = 2x + 4$ A. Find $(f \circ g)(x)$
B. Find $(g \circ f)(x)$

3) $f(x) = 2x + 3$ $g(x) = 5x$ A. $(f \circ g)(x)$
B. $(g \circ f)(x)$

4) $f(x) = x^2 + 3x$ $g(x) = x + 4$ A. $(f \circ g)(x)$
B. $(g \circ f)(x)$

5) $f(x) = 2x - 1$ $g(x) = x^2 + 1$ A. $(f \circ g)(x)$
B. $(g \circ f)(x)$

CW Practice 11/4 - Composition KEY

$$1) (f \circ g)(x) = f[g(x)]$$

$$= 3(2x^3 + 1) - 2 = \boxed{6x^3 + 3 - 2}$$

$$= \boxed{6x^3 + 1}$$

$$2) A. (f \circ g)(x) = f[g(x)]$$

$$= (2x + 4) + 2 = \boxed{2x + 6}$$

$$B. (g \circ f)(x) = g[f(x)]$$

$$= 2(x + 2) + 4 = 2x + 4 + 4 = \boxed{2x + 8}$$

$$3) A. (f \circ g)(x) = f[g(x)]$$

$$= 2(5x) + 3 = \boxed{10x + 3}$$

$$B. (g \circ f)(x) = g[f(x)]$$

$$= 5(2x + 3) = \boxed{10x + 15}$$

$$4) A. (f \circ g)(x) = f[g(x)]$$

$$= (x + 4)^2 + 3(x + 4)$$

$$= (x + 4)(x + 4) + 3x + 12$$

$$= (x^2 + 8x + 16) + 3x + 12 = \boxed{x^2 + 11x + 28}$$

$$B. (g \circ f)(x) = g[f(x)]$$

$$= (x^2 + 3x) + 4 = \boxed{x^2 + 3x + 4}$$

$$5) A. (f \circ g)(x) = f[g(x)]$$

$$= 2(x^2 + 1) - 1 = \boxed{2x^2 + 1}$$

$$= 2x^2 + 2 - 1 = \boxed{2x^2 + 1}$$

$$B. (g \circ f)(x) = g[f(x)]$$

$$= (2x - 1)^2 + 1$$

$$= (2x - 1)(2x - 1) + 1$$

$$= 4x^2 - 4x + 1 + 1 = \boxed{4x^2 - 4x + 2}$$